NATURAL SITES

1. Natural sites consist of natural areas and water bodies that were slightly or not at all modified by human activities. Any relatively intact ecosystem can be a natural site: forests, grasslands, inland bodies of water, wetlands, coastal or inland areas, marine environments such as coral reefs, etc..

2. Natural sites deserve special attention when conducting assessments of environmental impacts. These ecosystems are valuable for several reasons: (a) they contain habitats of native plant and animal species (and thus contribute to the conservation of biological diversity), (b) they provide environmental benefits to society without direct costs or minimal and (c) they are, in some cases, essential to the survival of indigenous peoples. Natural sites are vulnerable to population pressure, economic development and the situation of landless people, and are declining in many developed countries as well as those in UEMOA space.

3. Natural sites of special interest are those that are considered as important for the conservation of biological diversity or because of their ecological functions. Some of them have been officially designated by national governments, sometimes in collaboration with international organizations such as the United Nations (eg. Natural World Heritage sites). Others are still unprotected while being recognized by national and international bodies as biologically unique, ecologically sensitive or important to the local people because of environmental benefits they offer.

Table 1: Objectives and examples of management systems for biodiversity conservation

Onsite		Offsite	
Preservation of ecosystems	Species Management	living Collections	genebanks
←---------- Increased natural processes		Increased human intervention ------→	
maintain: Reservoir of genetic resources	maintain: genetic interaction between the semi-domesticated species and their wild ancestors	maintain: reproduction of things that we can not keep in gene banks	maintain: source of genetic material necessary for breeding programs
evolutionary potential	sustainable use of wild species	field research and development of new species	collection de matériel génétique d'espèces menacées problématiques
operation of various ecological processes	viable populations of species in danger	offsite cultivation or propagation	collections or species reference for research and for the purpose of filing a patent
set of most of the known or unknown species	species that play an indirect beneficial role (pollination or fight against parasites)	captivity of endangered breeding animals in the wild	access to germplasm in large geographic areas
representative samples of unique natural ecosystems	key species contributing to the maintenance of important ecosystems or having a regulatory function	immediate access to wild species (research, education and exhibition)	genetic material of endangered species
national Parks Natural Areas of Research marine reserves Development Plans of resources	Agro-cosystems Protected areas for wild fauna and flora In situ gene banks Parks and fauna Reserves	zoos botanical Gardens Collections on the ground Captivity breeding programs	seeds and pollen Banks
Source : United States Office of Technology Assessment, 1986			

Principles, procedures and guidelines of BOAD

4. BOAD does not finance projects that involve the conversion of natural sites of special interest. If it comes to other types of areas, BOAD prefers that the project is located on land that has already been converted. If the conversion of natural sites is justified, then it is better to convert those which have less value. If a significant conversion is justified (an area of about 100 km2, or less, if it still represents a significant portion of a natural site for a particular ecosystem), this loss should be compensated by adding a management component of natural sites. This component will directly finance the protection of a comparable area in ecological way.

5. This policy applies to any project involving a natural site.

6. BOAD policy also stipulates that a protective component of natural sites should be integrated into any project whose success depends on ecological properties of natural sites. Even in cases where natural sites would have no direct relevance to the project, it can still be improved by promoting the management of these sites in order to increase the socio-economic benefits of the country. It should, however, encourage projects whose sole purpose is to improve the management of natural sites.

Relevance to the Bank's investments

7. Natural sites can almost relate to any sector that BOAD operates; either as resources likely to deteriorate or disappear as a result of direct or indirect

impacts of the project, either as resources whose project success depends on in part.

- Agriculture and livestock projects can result in the displacement of wild species and loss of natural sites.

- aquaculture projects sometimes lead to loss of natural spawning and breeding and to ecosystem disruption caused by the introduction of exotic species , and the headwaters and wetlands that serve as nursery areas for many natural fishery resources may be compromised if they are not protected .

- Forestry projects can include the use of natural sites and forest roads , promote their uncontrolled access .

- A number of transportation projects, including roads, railways, canals, port development and dredging of waterways provide easy access to natural areas, promote development and can be the direct cause of their disappearance.

- While dams can inundate natural sites it is equally true they can benefit insofar from them as they prevent erosion and sedimentation, protect water quality of water ponds and help maintain the balance of the hydrological cycle.

8. The impact on natural sites is generally of intersectoral order. Wetlands and headwaters are, for example, sensitive to spills of industrial and municipal wastewater, agricultural runoff waters, siltation caused by logging operations and to dredging and filling activities of the coastline. If these sites are not protected, the productivity and incomes of fishing activities decline. The loss or degradation of natural sites that are tourist attractions

will also lead to a reduction of income for businesses and communities that depend on them.

9. There is also a link between the conditions of the local or regional environment and those of the environment on a global scale. Natural sites may be breeding, resting and wintering area for migratory fish and birds. Large forest corridors may have some effect on the local or regional climate and their destruction may be a factor in global warming.

10. Experiments have shown that for the projects including a component for the management of natural sites, if we failed to include early in the project cycle provisions on the management of these areas, the benefits that one can draw from them will be reduced. If such a component somewhat complicates the development of the project, it is rare that it is the cause of significant delays. Therefore BOAD on this basis has concluded that the management of natural sites be integrated into the cycle of certain types of projects, and to do so as soon as possible to reduce costs and facilitate the implementation.

Guidelines for the assessment of environmental impacts

11. The environmental assessment provides a framework in which to compare the cost-benefit that represents the conversion of natural areas for more intensive uses to what should be obtained if they are kept intact. It is, moreover, a way to explore alternatives to the project or components which have neutral or positive effects on these ecosystems, to identify and implement measures to mitigate or compensate negative effects that can not be avoided.

12. The description of the environment of a project in an assessment of environmental impacts should describe the location and characteristics of

natural sites in the assessment area. It will be important to obtain for each of them the following information:

- name of the place (if it has an official name) ;
- types of ecosystems;
- geographical area (that a map will show) and size ;
- physical, biological and socio-cultural characteristics of importance (. eg foraging important aquifers , habitats of endangered species, the presence of tribal people, sites of religious importance etc. .)
- sites recognized by international, national authorities , or that have a particular interest , as appropriate;
- state of the site (eg intact, degraded .)
- type of protection or management , as appropriate , using the categories used by IUCN for management of natural sites or which uses these categories for its own nomenclature; finally
- data sources listed above.

13. Information on natural recognized sites by international institutions: such as the World Heritage (UNESCO), wetlands of international importance, the habitats of endangered species, national parks and protected areas can be drawn from publications and computerized data of the World Conservation Union (IUCN). In some countries, the agencies responsible for the management of natural sites if any, may provide information on the location of natural sites of national importance and give its' description. National NGOs also can be valuable sources of information, and even international NGO dedicated to the protection of nature: such as the World Wildlife Fund and the Nature Conservation.

14. The analysis of alternatives to the project and expected impacts it may have on the environment must take into account the risks it poses to the natural sites and the report of the assessment of impacts on environment will clearly present the results of this analysis. Assessing the significance of

impacts is a task for specialists whose expertise varies depending on the type of ecosystem. It appealed, but not limited to, the following concepts:

- extent of natural sites lost in absolute terms and relative to the entire ecosystem in the country;
- extent modified by the same criteria and the nature of the alteration;
- importance of changes to key resources of natural sites (eg water quality , freshwater discharge , tidal range , quality of the atmosphere , nutrient cycles .)
- magnitude and duration of external disturbances (eg, noise , smoke, dust and particulates emissions during construction and operation; . road and sea traffic; tourist arrivals in previously intact sites, disruption of migration or daily movements) ;
- importance of the loss or alteration of habitats and the effects they are likely to have on the number and diversity of animal and plant species;
- changes in plant and animal productivity , taking into account , to the extent possible, their economic value (eg annual income of fishery resources.)
- reduction of ecological functions (eg auto assimilation of the area , erosion control and groundwater recharge .) renewal costs of missing benefits;
- number of affected indigenous peoples and nature of the impact ;
- development of tourist visits and revenue they bring , if the natural site is a tourist attraction ;
- changing of societal benefits (eg recreation, landscape quality , awareness raising on nature protection, medical research.)
- indirect effects of the loss of natural areas (eg, increasing of pressure on the remaining spaces, the need to use dredging channels more frequently .)
- indirect effects of the ease of access to natural sites such as the increase in revenue generated by tourism , the benefits of leisure

activities, poaching, disturbance of fauna and flora , conversion and illegal gathering .

15. It will be important to promote measures that will prevent or reverse the negative effects, which will be incorporated in impact mitigation plan developed as part of the assessment of environmental impacts. If we cannot avoid that large portions of natural sites are converted, the impact mitigation plan should not be limited to these measures but also recommend a management component of natural sites to compensate for losses.

16. Management systems differ depending on the needs for the protection of biological species and ecological functions, the economic prospects for a region, the needs of life of local populations and the modes of operation of adjacent lands. Often, mitigation measures and management techniques, examples of which are given below, will overlap or be equivalent. It will be necessary to evaluate case by case, the capacity of institutions to implement technical or regulatory solutions to ensure that the mitigation plan and the management component of natural sites incorporate the recommendations which will strengthen the capacity of institutions to provide training programs and sensitization. It should consider the following:
    - choose another location or another road alignment to avoid natural habitats;
    - establish areas of management of natural sites that will provide protection or some form of controlled use on the project site or its surroundings (a form of compensation for spaces converted);
    - include in the project design elements that will protect the fauna(fish ladders , wildlife crossings , noise barriers) ;
    - establish buffer zones around natural sites;
    - rehabilitate or build ecosystems to compensate for the conversion of some or augment existing populations;

- finance research programs on the management of natural sites and the conservation of biological diversity;
- strengthen governmental and non-governmental institutions on management of natural sites by providing them personnel and equipment, by providing training and supporting measures of effectiveness ;
- implement educational programs on the environment and protection of nature in schools.